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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,327	05/24/2006	Yusuke Mitarai	00862.514141.	5699
5514 7590 02/13/2008 FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			EXAMINER TORRES, JOSEPH D	
			ART UNIT 2112	PAPER NUMBER
			MAIL DATE 02/13/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/580,327

Applicant(s)

MITARAI ET AL.

Examiner

Joseph D. Torres

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 06/21/2007, 05/24/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claims 3-4 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claims 3-4 fail to recite any limitation that can be regarded as a step/function that further limits the method of claim 1. Claims 3-4 instead recite a data structure of abstract mathematical values, expressions and equations.

Claim 8 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 8 fails to recite any limitation that can be regarded as a step/function that further limits the method of claim 1. Claim 8 instead recites an intended result of a step recited in claim 1.

Claim 13 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 13 fails to recite any

limitation that can be regarded as a structural element that further limits the apparatus of claim 12. Claim 13 instead recites a data structure of abstract mathematical values, expressions and equations.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claims 1-12 substantially recite a setting step of setting said base $X(x)$ and $Y(y)$; a reconstruction step of reconstructing n data $\tilde{f}(x, y) = X(x)Y(y)$ by using said bases $X(x)$ and $Y(y)$; an error calculation step of calculating an error ΔX and ΔY between said n data to be encoded $f(x, y)$ and said reconstructed n data $\tilde{f}(x, y)$ by using a predetermined error evaluation function $E = \iint \frac{1}{2} \{f(x, y) - \tilde{f}(x, y)\}^2 dx dy$; and a correction step of correcting said base based on said error by calculating $X'(x) = X(x) + \Delta X$ and $Y'(y) = Y(y) + \Delta Y$.

The specification fails to teach any functions X , Y or f to enable $X(x)$, $Y(y)$ and $f(x, y)$.

As per claim 11, the specification fails to teach any functions A , w or x_{ij} to enable $A(x_1, x_2, \dots, x_k)$, $w(x_1, x_2, \dots, x_k)$ and any of the $x_{ij}(x_i)$ or $x_{ij}(x_j)$ in claim 11.

As per claims 14 and 15, the specification fails to teach any functions F_{x_L} , F_{y_L} or f to enable $F_{x_L}(x)$, $F_{y_L}(y)$ and $f(x,y)$ in claim 14. In addition the equation for $R(x,y)$ is not taught anywhere in the specification.

Claims 1-15 are rejected under 35 U.S.C. 112, first paragraph, because the best mode contemplated by the inventor has not been disclosed. Evidence of concealment of the best mode is based upon the specification failing to teach any functions X , Y or f to enable $X(x)$, $Y(y)$ and $f(x,y)$ much less functions X , Y or f to be used in a best mode.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "said bases" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-15 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Claims 1-12 recite method and apparatus for encoding n data $f(x,y)$ to be encoded, into data $X(x), Y(y)$ representing a base.

Claims 1-12 substantially recite a setting step of setting said base $X(x)$ and $Y(y)$; a reconstruction step of reconstructing n data $\tilde{f}(x,y) = X(x)Y(y)$ by using said bases $X(x)$ and $Y(y)$; an error calculation step of calculating an error ΔX and ΔY between said n data to be encoded $f(x,y)$ and said reconstructed n data $\tilde{f}(x,y)$ by using a predetermined error evaluation function $E = \iint \frac{1}{2} \{f(x,y) - \tilde{f}(x,y)\}^2 dx dy$; and a correction step of correcting said base based on said error by calculating $X'(x) = X(x) + \Delta X$ and $Y'(y) = Y(y) + \Delta Y$.

Claims 1-13 are directed to an abstract algorithm using abstract mathematical equations to calculate abstract mathematical values $\tilde{f}(x,y)$, ΔX , ΔY , $X'(x)$ and $Y'(y)$.

Claims 14 and 15 are directed to similar but a substantially more complex abstract algorithm using abstract mathematical equations to calculate abstract mathematical values.

The claims as written attempt to gain a patent on every "substantial practical application" of an abstract mathematical algorithm/idea.

The courts have also held that a claim may not preempt ideas, laws of nature or natural phenomena. The concern over preemption was expressed as early as 1852.

See *Le Roy v. Tatham*, 55 U.S. 156, 175 (1852) ("A principle, in the abstract, is a fundamental truth; an original cause; a motive; these cannot be patented, as no one can claim in either of them an exclusive right."); *Funk Brothers Seed Co. v. Kalo Inoculant Co.*, 333 U.S. 127, 132, 76 USPQ 280, 282 (1948) (combination of six species of bacteria held to be nonstatutory subject matter).

**>Accordingly, one may not patent every "substantial practical application" of an idea, law of nature or natural phenomena because such a patent would "in practical effect be a patent on the [idea, law of nature or natural phenomena] itself." *Gottschalk v. Benson*, 409 U.S. 63, 71-72, 175 USPQ 673, 676 (1972).

Simply put, claims that describe features in the Applicant's specification at the Abstract level without any regard to function or utility are nonstatutory.

Note: abstract mathematical concepts and algorithms are natural phenomena that can be discovered through deductive reasoning based on the application of the fundamental axioms of mathematics.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax phone

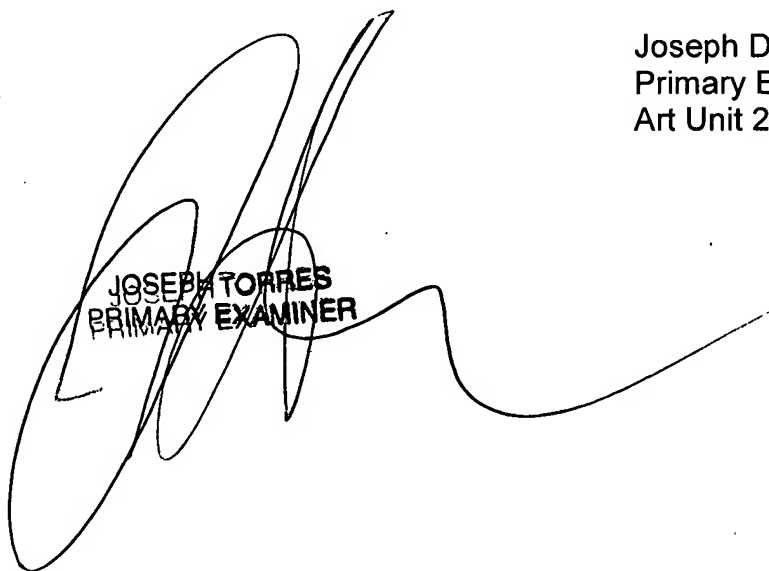
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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Joseph D. Torres, PhD
Primary Examiner
Art Unit 2112



JOSEPH TORRES
PRIMARY EXAMINER